ChatEDA: A Large Language Model Powered Autonomous Agent for EDA

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Abstract

The integration of a complex set of electronic design automation (EDA) tools to enhance interoperability is a critical concern for circuit designers. Recent advancements in large language models (LLMs) have showcased their exceptional capabilities in natural language processing and comprehension, offering a novel approach to interfacing with EDA tools. This research article introduces ChatEDA, an autonomous agent for EDA empowered by an LLM, AutoMage, complemented by EDA tools serving as executors. ChatEDA streamlines the design flow from the register-transfer level (RTL) to the graphic data system version II (GDSII) by effectively managing task decomposition, script generation, and task execution. Through comprehensive experimental evaluations, ChatEDA has demonstrated its proficiency in handling diverse requirements, and our fine-tuned AutoMage model has exhibited superior performance compared to GPT-4 and other similar LLMs.